

REMARKS/ARGUMENTS

Claims 1-30 stand rejected in the outstanding Official Action. Claims 1, 3, 4, 6-11 and 28-30 have been amended and therefore claims 1-30 remain in this application.

The Examiner's indication that the originally filed drawings are accepted is very much appreciated. Additionally, the Examiner's review and consideration of the prior art submitted in the previously submitted Information Disclosure Statement is very much appreciated.

The specification is objected to, with the Examiner indicating that the abstract of the disclosure is not a single paragraph. Applicants have amended the abstract to delete the reference to Figure 3, leaving only the single paragraph originally submitted. In view of the above amendment, the objection to the abstract has been obviated and notice to that effect is respectfully requested.

Claims 1-30 stand rejected under 35 USC §102(e) as anticipated by Sahin (U.S. Patent 6,769,054). In order to analyze the rejection of a claim under 35 USC §102, it is important to understand that, as set forth by the Court of Appeals for the Federal Circuit, all claim limitations must be shown in a single reference. In the case of *Lindemann Maschinenfabrik GMBH v. American Hoist & Derrick*, 221 USPQ 481, 485 (Fed. Cir. 1984), the Court held that "[a]nticipation requires the presence in a single prior art reference disclosure of each and every element of the claimed invention, arranged as in the claim."

Claim 1 clearly requires the structure of "a trace data annotator for outputting said trace data streams together with said reference timestamp data associated with points within said respective trace data streams to provide temporal correlation between said at least two trace data sources." While Applicants' original claim language "operable to output" suggests that the trace

data annotator must have the capability of providing "said trace data streams . . .", some Patent Office examiners may take the position that "operable to output" is not a positive recitation. Applicants have amended the claim to recite "trace data annotator for outputting . . ." which is a positive recitation of such structure.

Accordingly, in order to anticipate claim 1 and all claims dependent thereon, it is incumbent upon the Examiner to identify where and how the cited Sahin reference teaches a trace data annotator for outputting trace data streams" On page 3, section 5 of the outstanding Official Action, the Examiner suggests that the claimed "trace data annotator" is disclosed in Sahin at column 20, lines 5-31. This is believed to be clear error on the part of the Examiner for a number of reasons.

Firstly, Applicants assume the Examiner meant to say column 20, lines 4-31, so as to encompass the first two full paragraphs under column 20. A review of column 20, lines 5-31 clearly shows that Sahin teaches that I/O trace data is collected at particular times for each host interface port on each channel director in communication with the data storage system 150 (column 20, lines 4-7). This is confirmed by reference to Sahin Figure 9 in which the timer entries show a time of collection, as well as a channel director (elements 155 and 157 in Figure 1) to be associated with an I/O.

Sahin further confirms this interpretation by stating at column 20, lines 24-26, that "[i]nside each trace buffer every event has a timestamp that comes from a director." These time stamps are generated by the host channel directors 155, 157 shown in Figure 1 and discussed at column 7, lines 48-49. Thus, Sahin, instead of teaching of a trace data annotator, teaches that timestamps are associated with the time that the data arrives at the associated host channel

director 155, 157. From this clear teaching, it is readily apparent that the timestamps generated by the Sahin system are not "associated with points within the respective trace data streams to provide temporal correlation between said at least two trace data sources" as required by Applicants' independent claim.

Secondly, it is also apparent that, while the Examiner contends that Sahin discloses "at least two trace data sources, each of said at least two trace data sources being operable to generate a respective trace data stream," such is not the case. The Examiner suggests that this is disclosed in Figure 13 and discussed at column 5, lines 25-43. A review of column 5, lines 25-43 will indicate that there is no indication of "at least two trace data sources" as required by Applicants' independent claim 1. Thus, the Sahin reference fails to teach Applicants' claimed "at least two trace data sources" or Applicants' "trace data annotator."

Should the Examiner believe the above analysis of the Sahin reference to be in error, he is respectfully requested to point out exactly where Sahin teaches both Applicants' claimed two trace data sources and Applicants' claimed trace data annotator and their claimed interrelationship.

The Sahin reference in actuality discloses a system for preparation of workload data for replaying in a data storage environment. A data storage system is provided with an event trace routine which is able to access trace data and/or trace buffer pointer information from a trace buffer when called upon to do so by the trace capture process. Different host computers 110-1 and 110-2 (as shown in Figure 1) are connected to a data storage system 150 via respective host interfaces 118 and 119. However, there is no disclosure of the claimed "at least two trace data sources" or the "trace data annotator."

Finally, should the Examiner believe there to be support for an allegation that claim 1 is obvious in view of Sahin or any combination involving the Sahin reference, it should be understood that Sahin is directed to a completely different problem than that of the present invention. Sahin is directed to the problem of duplicating a workload in a data storage environment, as noted above (see Sahin column 2, lines 12-18). Sahin teaches how to prepare a trace of I/Os to a data storage medium for an extended period of time and to replay those I/Os back to that or another system.

The present invention instead is directed to the problem of properly debugging a data processing system in which there can be interdependency between processing operations performed by different processing components of the system. Sahin is not directed to this problem, but the presently claimed invention solves this problem by generating reference timestamp data and annotating the trace data streams with reference timestamp data prior to output. This provides an effective way of enabling temporal correlation between points in the trace data stream to be performed down-line by trace analysis tools. Sahin teaches away from this problem and solution in that the purpose of the Sahin timestamp data is to enable the I/O data to be played back in symphonic fashion (column 20, lines 20-22). Sahin neither discloses nor suggests timestamps that provide temporal correlation between two trace data sources. As a result, independent claim 1 and all claims dependent thereon cannot possibly be anticipated or even rendered obvious by the Sahin reference.

Applicants' independent method claim 15 specifies the method steps which are accomplished by the structure in Applicants' independent claim 1, i.e., "generating at least two trace data streams" and "annotating said at least two trace data streams"

Independent claim 28 specifies a computer program product for controlling a data processing apparatus "to analyze at least two annotated trace data streams" and trace data processing code "for performing temporal correlation between said points in said at least two trace data streams using said reference timestamp data."

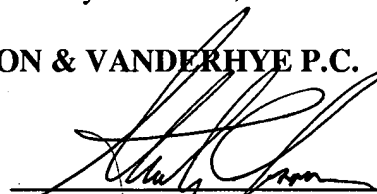
As with claim 1, independent claims 15 and 28 are simply not anticipated or rendered obvious by the subject matter of the Sahin reference. Any further rejection of independent claims 1, 15 and 28 or claims dependent thereon is respectfully traversed.

Having responded to all objections and rejections set forth in the outstanding Official Action, it is submitted that claims 1-30 are in condition for allowance and notice to that effect is respectfully solicited. In the event the Examiner is of the opinion that a brief telephone or personal interview will facilitate allowance of one or more of the above claims, he is respectfully requested to contact Applicants' undersigned representative.

Respectfully submitted,

NIXON & VANDERHYTE P.C.

By:



Stanley C. Spooner
Reg. No. 27,393

SCS:kmm
901 North Glebe Road, 11th Floor
Arlington, VA 22203-1808
Telephone: (703) 816-4000
Facsimile: (703) 816-4100